

**CURRICULUM VITAE**

**Gerald B. Kasting**  
**Associate Professor of Pharmaceutics and Cosmetic Science**  
**College of Pharmacy**  
**The University of Cincinnati**  
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**EDUCATION**

Ph.D.            Massachusetts Inst. of Technology, 1976-80, Physical Chemistry  
                  Major Professor: Carl W. Garland  
                  Thesis Title: "High Pressure Heat Capacity of Cyanobiphenyl  
                  Liquid Crystals Near the Nematic-Smectic A Transition"

B.A.            Vanderbilt University, 1971-75, Chemistry, magna cum laude, high  
                  honors in chemistry

**HONORS AND AWARDS**

Co-Chair, Gordon Research Conference on Barrier Function of Mammalian Skin, 2005  
Society of Cosmetic Chemists, Shaw Mudge Award (best paper at national meeting), 2001  
Society of Cosmetic Chemists, Shaw Mudge Award (best paper at national meeting), 1996

National Science Foundation Graduate Fellow  
Phi Beta Kappa  
Breckenridge Scholar  
American Institute of Chemists Outstanding Senior Chemistry Major

High school Co-valedictorian  
Courier-Journal Outstanding Student  
National Merit Scholarship Award Winner  
National Honor Society

**PROFESSIONAL EXPERIENCE**

1999-present        Associate Professor, University of Cincinnati College of Pharmacy  
                  Mathematical Modeling of Percutaneous Absorption  
                  Development of improved methods for predicting the systemic absorption rates and  
                  local skin concentrations resulting from topical exposure to therapeutic agents or to  
                  hazardous chemicals.

1980-1993        Research chemist, The Procter & Gamble Company, Cincinnati, Ohio  
1993-1999        Senior Scientist, The Procter & Gamble Company, Cincinnati, Ohio

- 1998-1999      Skin Beauty Care Technology Division  
 Skin Benefits for Rinse-off Products  
 Application of skin repair technologies to personal cleansing products including soap bars and shower gels. Deposition of ingredients on skin.
- 1994-1998      Skin Beauty Care Technology/Cosmetic & Fragrance Technology Division  
 Visual Improvement of Aging Skin  
 Formulation and delivery of actives for novel skin repair technologies. Design and execution of human facial appearance studies. Mathematical modeling of skin penetration process.
- 1990-1994      Hair & Skin Care Technology Division  
 Photoprotection Section  
 Formulation and delivery of actives for novel skin repair and photoprotection technologies.
- 1987-1990      Health & Personal Care Technology Division  
 Biopharmaceutics Section  
 Characterization of drug actives, topical and transdermal dose form development, skin iontophoresis studies and modeling. Intranasal dosing technology, droplet sizing and dose distribution for metered dose nasal sprays.
- 1984-1987      Health & Personal Care Technology Division  
 Novel Analgesics Section  
 Preformulation studies, antinoceptive testing, QSAR analysis, metabolism assays, pharmacokinetic/ADE studies, parenteral dose form development.
- 1983-1984      Health & Personal Care Technology Division  
 Topical Anti-inflammatories Section  
 In vitro skin penetration studies, penetration aid technology, iontophoresis studies, skin penetration modeling.
- 1980-1983      Corporate Research Division  
 Lubricant Additive Development  
 Design and evaluation of new antiwear additives for automotive engine oils based on proprietary fatty acid chemistry.
- 1975 (summer)   Chemist, Lawrence Livermore Laboratories, Livermore, California  
 Chelate solvent extraction of actinides and lanthanides.
- 1974 (summer)   Student, Oak Ridge National Laboratories, Oak Ridge, Tennessee  
 Contrast enhancement of radiographs using optical spatial filtering techniques.
- 1971-1973 (summer) Technician, ATEC Associates, Inc., Louisville, Kentucky  
 Soil and concrete testing.

## **PROFESSIONAL AFFILIATIONS**

### **Scientific and Professional Societies**

American Association of Pharmaceutical Sciences

2002 Chair – Dermatopharmaceutics Focus Group  
 1996 Chair – Dermatopharmaceutics Focus Group  
 Phi Beta Kappa

Gordon Research Conference on Barrier Function of Mammalian Skin  
 2003 Co Vice-Chair  
 2005 Co Chair

#### Scientific Journals

Journal of Cosmetic Chemistry, editorial board  
 Journal of Pharmaceutical Science, editorial board, 1992 – 2001; 2004-present  
 Pharmaceutical Research, referee  
 International Journal of Pharmaceutics, referee  
 Journal of Controlled Release, referee  
 Journal of Investigative Dermatology, referee  
 Toxicology in Vitro, referee

#### Review Boards

Reparative Medicine Study Section ZRG1 SSS-M 01 (NIH)  
 Tissue Engineering BRP Study Section MOSS G 52 (NIH)

### **PERSONAL**

Date of Birth: January 2, 1953

Spouse: Barbara Glenn Kasting  
 President  
 Alpha Advisors, Inc.

Children: Elinor, 21; Jonathan, 16.

Interests: Triathlon (running, biking, swimming), waterskiing, youth soccer, guitar. Four-time division winner, Little Miami Triathlon; 1999 ascent – Mt. Kilimanjaro; 2005 descent & ascent – Grand Canyon South Rim.

### **RESEARCH SUPPORT**

#### **Ongoing Research Support**

Research contract	Kasting (PI)	07/01/05 – 06/30/08
Development of a Toxicodynamic Model to Better Predict Epidermal		240,000 Euro
Bioavailability of Contact Allergens		
COLIPA		

This is a joint research project with the contact allergy research group at Procter & Gamble to develop better risk assessments for consumer products with regard to elicitation of allergic responses.

1 R01 OH007529-01 Kasting (PI) 09/01/02 – 08/31/06  
 Improved Methods for Dermal Exposure Estimation \$1,333,670  
 NIOSH/CDC

This is a collaborative project with J. M. Nitsche (SUNY Buffalo Dept. of Chem. Engineering) to develop improved mathematical models for the skin absorption of hazardous chemicals following occupational or environmental exposures.

Research contract Kasting (PI) 3/01/05 – 2/28/06  
 $\alpha$ -Hydroxy Acid Skin Delivery and Retention \$14,000  
 Kao Brands

This project is designed to support the risk assessment associated with Kao Brands' line of  $\alpha$ -hydroxy acid-containing skin and hair care products.

Research contract Hoath (PI) 6/01/05 – 11/30/05  
 Development of a Standardized in Vitro Human Skin Equivalent \$78,000  
 for Assessment of Product Safety and Efficacy

This project will test the utility of a new growth system for cultured skin substitutes (developed in GBK's laboratories) as an in vitro test system for skin care consumer products.

RO1 DK61689-01 Roy-Chaudhury (PI) 08/05/02 – 07/31/06  
 Local Intiproliferative Therapy for Venous Neointimal Hyperplasia  
 NIH

The objective of this project is to develop drug-loaded polymer systems that reduce the intravenous tissue growth leading to plugging of stents used in hemodialysis treatment of diabetic subjects. GBK has responsibility for modeling of drug release from the polymer systems.

Role: Collaborator

### **Completed Research Support**

Industrial research contract Kasting (PI) 07/01/01 – 06/30/03  
 Impact of Novel Surfactant Systems on Topical Delivery 30,000  
 The Procter & Gamble Company

This project is an experimental investigation of the topical delivery properties of surfactant/water systems with an unusual cubic phase architecture.

Role: PI

Industrial research contract Kasting (PI) 11/01/01 – 05/30/03  
 Glycerol Skin Absorption Studies \$10,450  
 The Andrew Jergens Company

This project is an experimental investigation of the skin deposition and absorption of the moisturizing agent, glycerol, from prototype skin cream formulations.

Role: PI

SHC #8670 Boyce (PI) 1/01/02 – 12/31/02  
 Shriners' Burns Institute

This project is directed toward characterization, use, and scale-up of cultured skin substitutes for burn allograft therapy.

Role: Consultant

GOALI BES-9818160 Nitsche (PI) 04/01/99 – 03/31/02  
 Comprehensive Model of Molecular Transport and Delivery Through the Skin \$193,556  
 NSF

This project involves the initial development of a detailed mathematical model for drug transport in the skin, using 2-D and 3-D finite difference models to represent drug transport through a detailed skin microstructure.

Role: Industrial partner (obtained while at Procter & Gamble)

International Program for Animal Alternatives. Kasting (PI) 06/01/99–05/31/01  
 The Procter & Gamble Company \$58,709

Predictive Computational Model of Skin Permeability to Reduce the Need for Animal Models: Experimental Studies

The major goal of this project was to measure microscopic transport properties pertinent to a detailed mathematical model of drug transport in skin.

Role: PI

University Research Council Faculty Support Grant. Kasting (PI) 09/01/99 – 12/31/99  
 Hydration Effect on Skin Permeability: Method Development \$5,000  
 The University of Cincinnati

This project investigated a new technique for measuring the effect of water on stratum corneum permeability, with the objective of developing more a more precise understanding of this phenomenon for incorporation into broader mathematical models for skin permeability.

Role: PI

Industrial research contract Kasting (PI) 09/01/00 – 5/31/01  
 Skin Penetration of Botanical Ingredients \$22,988  
 The Andrew Jergens Company

This project involved the determination of local tissue and systemic levels subsequent to topical application of certain botanical ingredients. There were mathematical modeling and experimental confirmation aspects to the project. The primary objective was to support the dermal risk assessment for these materials.

Industrial research contract Kasting (PI) 09/01/00 – 10/31/00  
 In Vitro Skin Penetration II \$10,445  
 The Procter & Gamble Company

This project involved continued evaluation of the topical delivery properties of two proprietary PG skin care ingredients.

Industrial research contract Kasting (PI) 03/01/00 – 6/31/00  
 In Vitro Skin Penetration \$10,595  
 The Procter & Gamble Company

This project involved the evaluation of the topical delivery properties of two proprietary PG skin care ingredients.

## **RESEARCH PUBLICATIONS**

N.D. Barai, A.P. Supp, S.T. Boyce, M.O. Visscher, and G.B. Kasting, Improvement of epidermal barrier properties in cultured skin substitutes after grafting on athymic mice. *Wound Repair and Regeneration*, submitted

G.B. Kasting and M.A. Miller, Kinetics of finite dose absorption through skin 2. Volatile compounds. *J. Pharm. Sci.*, submitted

M.A. Miller, V. Bhatt and G.B. Kasting Absorption and evaporation of benzyl alcohol from skin. *J. Pharm. Sci.*, submitted

K. Kretsos, G. Zamora-Estrada, and G.B. Kasting, Quantifying the transport and clearance of skin permeants in the dermis. *Eur. J. Pharm. Sci.*, submitted

T.-F. Wang, G.B. Kasting, and J.M. Nitsche, A multiphase microscopic model for stratum corneum permeability. I. Formulation, solution and illustrative results for representative compounds. *J. Pharm. Sci.*, submitted

J.M. Nitsche, T.-F. Wang, and G.B. Kasting, A two-phase analysis of solute partitioning into the stratum corneum. *J. Pharm. Sci.*, submitted

T.-F. Wang, G.B. Kasting, and J.M. Nitsche, A multiphase microscopic model for stratum corneum permeability. I. Formulation, solution and illustrative results for representative compounds. *J. Pharm. Sci.*, submitted.

A. Santhanam, M.A. Miller, and G.B. Kasting, Absorption and evaporation of N,N-diethyl-m-toluamide (DEET) from human skin in vitro. *Toxicol. Appl. Pharmacol.* **204** (2005) 81-90.

K. Kretsos, and G. B. Kasting, Dermal capillary clearance: physiology and modeling. *Skin Pharmacol. Physiol.* **18** (2005) 55-74

Kretsos, K., Kasting, G.B., and Nitsche, J.M., Distributed diffusion-clearance model for transient drug distribution within the skin. *J. Pharm. Sci.* **93** (2004) 2820-2835.

P. Saiyasombati and G. B. Kasting, Prediction of fragrance headspace concentrations from physicochemical properties. *Perfum. Flavor.* **29** (2004) 38-47

P. Saiyasombati and G. B. Kasting, Evaporation of benzyl alcohol from human skin in vivo. *J. Pharm. Sci.* **93** (2004) 515-520

P. Saiyasombati and G. B. Kasting, Two-stage kinetic analysis of fragrance evaporation and absorption from skin. *Int. J. Cosmet. Sci.* **25** (2003) 235-243

P. Saiyasombati and G. B. Kasting, Disposition kinetics of benzyl alcohol following topical application to human skin in vitro, *J. Pharm. Sci.* **92** (2003) 2128-2139

G. B. Kasting, N. D. Barai, T.-F. Wang, and J. M. Nitsche, Mobility of water in human stratum corneum. *J. Pharm. Sci.* **92** (2003) 2326-2340

G. B. Kasting and N. D. Barai, Equilibrium water sorption in human stratum corneum, *J. Pharm. Sci.* **92** (2003) 1624-1631

P. S. Talreja, N. K. Kleene, W. L. Pickens, T.-F. Wang, and G. B. Kasting, Visualization of the lipid barrier and measurement of lipid pathlength in human stratum corneum, *AAPS PharmSci.* **3** (2001) Article 13.

G. B. Kasting and P. Saiyasombati, A physico-chemical properties based model for estimating evaporation and absorption rates from skin, *Int. J. Cosmet. Sci.* **23** (2001) 49-58.

G. B. Kasting, Kinetics of finite dose absorption through skin 1. Vanillylnonanamide, *J. Pharm. Sci.*, **90** (2001) 202-212.

G. B. Kasting, W. R. Francis, L. A. Bowman, and G. O. Kinnett, Percutaneous absorption of vanilloids: In vivo and in vitro studies, *J. Pharm. Sci.*, **86** (1997) 142-146.

D. Imbert, G.B. Kasting, R.R. Wickett, In vitro testing of topical liposomes: what we learned from a stratified skin permeation approach, *Perspectives in Percutaneous Penetration* **58** (1997) 202-205.

D. I. Imbert, G. B. Kasting, and R. R. Wickett, Measuring the encapsulation of cosmetic ingredients into liposomes: A method for large, hydrophilic compounds, *J. Soc. Cosmet. Chem.* **47** (1996) 337-350.

G. B. Kasting, T. G. Filloon, W. R. Francis, and M. P. Meredith, Improving the sensitivity of in vitro skin penetration experiments, *Pharmaceutical Research*, **11** (1994) 1747-1754.

D. Imbert, G. B. Kasting, and R. R. Wickett, Influence of liposomal encapsulation on the penetration of retinoic acid through human skin in vitro, *J. Soc. Cosmet. Chem.*, **45** (1994) 119-134.

J. M. Janusz, B. L. Buckwalter, P. A. Young, T. R. LaHann, R. W. Farmer, G. B. Kasting, M. E. Loomans, G. A. Kerckaert, C. S. Maddin, E. F. Berman, R. L. Bohne, T. L. Cupps, and J. R. Milstein, Vanilloids. 1. Analogs of capsaicin with antinociceptive and antiinflammatory activity, *J. Med. Chem.*, **36** (1993) 2595-2604.

G. B. Kasting and P. J. Robinson, Skin permeability is limited by viable tissues, *Pharmaceutical Research*, **10** (1993) 930-931.

G. B. Kasting, W. R. Francis, and G. E. Roberts, Skin penetration enhancement of triprolidine base by propylene glycol, *J. Pharm. Sci.*, **82** (1993) 551-552.

J. C. Keister and G. B. Kasting, A kinetic model for ion transport in skin, *J. Membrane Sci.*, **71** (1992) 257-271.

G. B. Kasting, Theoretical models for iontophoretic delivery, *Adv. Drug Deliv. Rev.*, **9** (1992) 177-199.

G. B. Kasting and M. D. Francis, Retention of etidronate in human, dog and rat, *J. Bone Mineral Res.*, **7** (1992) 513-522.

- G. B. Kasting and L. A. Bowman, Electrical analysis of fresh, excised human skin: A comparison with frozen skin, *Pharmaceutical Research*, **7** (1990) 1141-1146.
- G. B. Kasting and L. A. Bowman, DC electrical properties of frozen, excised human skin, *Pharmaceutical Research*, **7** (1990) 136-145.
- K. R. Wehmeyer, G. B. Kasting, J. H. Powell, D. L. Kuhlenbeck, R. A. Underwood and L. A. Bowman, Application of liquid chromatography with on-line radiochemical detection to metabolism studies on a novel class of analgesics, *J. Pharm. Biomed. Anal.*, **8** (1990) 177-183.
- G. B. Kasting and J. C. Keister, Application of electrodiffusion theory for a homogeneous membrane to iontophoretic transport through skin, *J. Controlled Release*, **8** (1989) 195-210.
- J. C. Keister and G. B. Kasting, The mechanism of iontophoresis, in: W. I. Higuchi and D. Sharma (eds.), *Transdermal Delivery of Drugs -- Proceedings of the Workshop on Current Status and Future Directions*, May 23-23, 1988, Bethesda, MD, NIH Publication No. 91-3075, November, 1990.
- G. B. Kasting, E. W. Merritt, and J. C. Keister, An in vitro method for studying the iontophoretic enhancement of drug transport through skin, *J. Membrane Sci.*, **35** (1988) 137-159.
- C. L. Slough, M. J. Spinelli, and G. B. Kasting, Transdermal delivery of etidronate (EHDP) in the pig via iontophoresis, *J. Membrane Sci.*, **35** (1988) 161-165.
- J. D. Taulbee and G. B. Kasting, A nonparametric method for evaluating results from laboratory antinociceptive tests, *J. Pharmacol. Methods*, **20** (1988) 197-206.
- G. B. Kasting, R. L. Smith, and E. R. Cooper, Effect of lipid solubility and molecular size on percutaneous absorption, in: B. Shroet and H. Schaeffer (eds.), *Pharmacology of the Skin*, Vol. 1, Karger, Basel, 1987, pp. 138-153.
- E. R. Cooper and G. B. Kasting, Transport across epithelial membranes, *J. Controlled Release*, **6** (1987) 23-35.
- J. C. Keister and G. B. Kasting, Ionic mass transport through a homogeneous membrane in the presence of an electric field, *J. Membrane Sci.*, **29** (1986) 155-167.
- J. C. Keister and G. B. Kasting, The use of transient diffusion to investigate transport pathways through skin, *J. Controlled Release*, **4** (1986) 111-117.
- G. B. Kasting, The composition of four-ball wear scar films produced by crankcase lubricants, *ASLE Trans.*, **28** (1985) 351-357.
- R. J. Birgeneau, C. W. Garland, G. B. Kasting, and B. M. Ocko, Critical behavior near the nematic-smectic A transition in (butyloxybenzylidene) octylaniline (4O.8), *Phys. Rev. A*, **24** (1981) 2624-2634.
- K. J. Lushington, G. B. Kasting, and C. W. Garland, Calorimetric study of phase transitions in the liquid crystal (butyloxybenzylidene)octylaniline (4O.8), *J. Phys. Lett. (Orsay, Fr.)*, **41** (1980) 419-422.



K. J. Lushington, G. B. Kasting, and C. W. Garland, Calorimetric investigation of a reentrant nematic liquid crystal mixture, *Phys. Rev. B*, **22** (1980) 2569-2572.

G. B. Kasting, K. J. Lushington, and C. W. Garland, Critical heat capacity near the nematic-smectic A transition in octyloxycyanobiphenyl in the range 1-2000 bar, *Phys. Rev. B*, **22** (1980) 321-331.

G. B. Kasting, C. W. Garland, and K. J. Lushington, Critical heat capacity of octylcyanobiphenyl (8CB) near the nematic-smectic A transition, *J. Phys. (Orsay, Fr.)*, **41** (1980) 879-884.

K. J. Lushington, G. B. Kasting, and C. W. Garland, A test of tricriticality in cholesteryl oleyl carbonate, *Phys. Lett.*, **74A** (1979) 143-145.

C. W. Garland, G. B. Kasting, and K. J. Lushington, High-resolution calorimetric study of the nematic-smectic A transition in octyloxycyanobiphenyl (8OCB), *Phys. Rev. Lett.*, **43** (1979) 1420-1423.

G. B. Kasting, E. K. Hulet, J. A. Heppert, and J. F. Wild, Separation of trivalent actinides from lanthanides by solvent extraction, *J. Inorg. Nucl. Chem.*, **41** (1979) 745-747.

Wm. B. Peatman, G. B. Kasting, and D. J. Wilson, The origin and elimination of spurious peaks in threshold photoionization spectra, *J. Electron. Spectrosc. Relat. Phenom.*, **7** (1975) 233-240.

### **BOOK CHAPTERS**

G. B. Kasting, Estimating the absorption of volatile compounds applied to skin. In *Dermal Absorption Models in Toxicology and Pharmacology* (J.E. Riviere, ed.), Taylor and Francis, New York, in press.

G. B. Kasting, M. A. Miller, and P. S. Talreja, Evaluation of stratum corneum heterogeneity. In *Percutaneous Absorption*, 4<sup>th</sup> ed. (R.L. Bronaugh and H.I. Maibach, eds.), Taylor and Francis, New York, in press.

G. B. Kasting, R. L. Smith and B. D. Anderson, Prodrugs for dermal delivery: solubility, molecular size and functional group effects, in: K. L. Sloan (ed.), *Prodrugs: Topical and Ocular Drug Delivery*, Marcel Dekker, New York, 1992, pp. 117-161.

### **PATENTS**

D. L. Bissett, G. B. Kasting, and K. L. Powers, U. S. Patent No. 5,821,237, Compositions for visually improving skin, Oct.13, 1998.

T. P. O'Neill, G. B. Kasting, and T. L. Cupps, U.S. Patent No. 5,461,075, Use of vanilloids for the prevention of lesions due to herpes simplex infections, Oct. 24, 1995.

G. B. Kasting and J. M. Gardlik, U. S. Patent No. 5,434,144, Methods of using cyclic polyanionic polyol dervatives for regulating skin wrinkles, July 18, 1995.

G. A. Piazza, A. W. Mazur, and G. B. Kasting, U.S. Patent No. 5,340,568, Topical composition and method containing deoxy and halo derivatives of lysophosphatidic acids for regulating skin wrinkles, Aug. 23, 1994.

J. H. Gardner, G. B. Kasting, T. L. Cupps, R. S. Echler, T. W. Gibson and J. I. Schulman, U.S. Patent No. 5,099,030, Novel compounds, pharmaceutical compositions and methods for treating inflammation and pain, Mar. 24, 1992.

J. H. Gardner, G. B. Kasting, T. L. Cupps, R. S. Echler, T. W. Gibson and J. I. Schulman, U.S. Patent No. 5,045,565, Novel compounds, pharmaceutical compositions and methods for treating inflammation and pain, Sept. 3, 1991.

G. B. Kasting, E. R. Massaro, R. L. Smith and W. E. Snyder, U.S. Patent No. 5,041,439, Penetrating topical pharmaceutical compositions, Aug. 20, 1991.

E. G. Drust, G. B. Kasting, R. L. Smith and J. B. Szkutak, U.S. Patent No. 5,026,556, Compositions for the transdermal delivery of pharmaceutical actives, Jun. 25, 1991.

J. M. Janusz, M. E. Loomans, T. R. LaHann and G. B. Kasting, U.S. Patent No. 4,898,887, Compounds and compositions having anti-inflammatory and analgesic activity, Feb. 6, 1990.

#### **INVITED PRESENTATIONS/ABSTRACTS OF CONTRIBUTED PAPERS (last 10 years)**

Kasting, G.B. The disposition of volatile chemicals on skin, University of Kentucky College of Pharmacy, February 18, 2005

Kasting, G.B. The disposition of volatile chemicals on skin, Skin Care Community of Practice, The Procter & Gamble Company, January 11, 2005

Gunt, H.B. and Kasting, G.B. Water sorption characteristics of the human nail plate. in International Society for Bioengineering and the Skin. Orlando, FL., 2004.

Santhanam, A., Miller, M.A., and Kasting, G.B. Disposition of DEET after topical application to human skin in vitro. in American Association of Pharmaceutical Scientists. 2004. Baltimore, MD.

Bhatt, V., Santhanum, A., Miller, M.A., and Kasting, G.B. Absorption and evaporation of volatile and potentially hazardous chemicals from human skin. American Association of Pharmaceutical Scientists National Meeting. 2004. Baltimore, MD.

Santhanam, A., Miller, M.A., and Kasting, G.B. Disposition of DEET after topical application to human skin in vitro. Society of Cosmetic Chemists Annual Scientific Seminar. 2004. Uncasville, CT.

Bhatt, V. and Kasting, G.B. A model for estimating the absorption and evaporation rates of DEET from human skin. American Association of Pharmaceutical Scientists. 2003. Salt Lake City, UT.

Gunt, H.B., Supp, A.P., Kasting, G.B., and Boyce, S.T. Effect of grafting on barrier properties of cultured skin substitutes. Society of Cosmetic Chemists National Meeting. 2003. Washington, D.C.

Effect of hydration on skin permeability. American Association of Pharmaceutical Scientists Annual Meeting, Toronto, November, 2002.

Perivascular delivery of paclitaxel to prevent neointimal hyperplasia associated with polytetrafluoroethylene (PTFE) dialysis grafts. in American Association of Pharmaceutical Scientists Annual Meeting, Toronto, November, 2002.

Mathematical model for the disposition of volatile compounds on skin following topical application. in International Conference on Occupational and Environmental Exposures of Skin to Chemicals: Science & Policy, Washington, D.C. ,September, 2002

Topical and transdermal delivery, One-day short course presented at the Procter & Gamble Company, Miami Valley Laboratories, August, 2002.

Advanced Skin Care. Two-day Society of Cosmetic Chemists short course, co taught with R. R. Wickett, Newark, NJ, March, 2002.

Mathematical model for perfume absorption and evaporation from skin, presented at the International Flavors and Fragrances (IFF) R&D Headquarters, Union Beach, NJ, March, 2002.

Disposition kinetics of benzyl alcohol following topical application to human skin in vitro. American Association of Pharmaceutical Scientists 16<sup>th</sup> National Meeting, Denver, November, 2001.

Skin penetration of polyphenolic compounds. American Association of Pharmaceutical Scientists 16<sup>th</sup> National Meeting, Denver, November, 2001.

Barrier properties of cultured skin substitutes. American Association of Pharmaceutical Scientists 16<sup>th</sup> National Meeting, Denver, November, 2001.

Evaluation of stratum corneum heterogeneity by a combination of membrane transport and uptake/desorption techniques, Gordon Research Conference on Barrier Function of Mammalian Skin, Bristol, RI, August, 2001

Dye localization and estimation of lipid pathlength in human stratum corneum, Society of Cosmetic Chemists Annual Scientific Seminar, New Orleans, May, 2001.

Topical and transdermal delivery, One-day short course presented to the 3M Drug Delivery Systems Division, St. Paul, MN, March, 2001

Mechanism of percutaneous absorption, talk presented to the FDA, Distinguished Professors lecture series, Washington, March, 2001.

Skin permeability and the penetration of cosmetic compounds, Short Course for Cosmetic Science Program, Chulalongkorn University, Thailand, February, 2001.

Topical and transdermal delivery, One-day short course presented to 3M Pharmaceuticals, St. Paul, MN, November, 2000

Mathematical model for perfume absorption and evaporation from skin, Second Meeting of the Experimental Contact Dermatitis Research Group, Dallas, TX, November, 2000.

Mathematical model for perfume disposition on skin following topical application, American Association of Pharmaceutical Scientists 15th National Meeting. Indianapolis, October, 2000.

Determination of lipid path length in human stratum corneum. in American Association of Pharmaceutical Scientists 15<sup>th</sup> National Meeting, Indianapolis, October, 2000.

Mathematical model for topical delivery to the hair follicle, 7th International Conference on Perspectives in Percutaneous Penetration, La Grande Motte, France, April, 2000.

Prediction of percutaneous absorption, 26<sup>th</sup> International Symposium on Controlled Release of Bioactive Materials, Boston, MA, June, 1999.

Absorption models for perfume raw materials: occlusion, volatility, and formulation effects, First Meeting of the Experimental Contact Dermatitis Research Group, Cincinnati, OH, May, 1999.

A skin blood flow model to address topical delivery to the hair follicle, Gordon Research Conference on Barrier Function of Mammalian Skin, Barga, Italy, April, 1999.

Topical formulations: design and development, Two-day seminar sponsored by Technomic Publishing Company, Cincinnati, OH and Basel, Switzerland, October, 1998; Toronto, Canada, May, 1999.

Skin penetration enhancement methods for hydrophilic compounds, AAPS 12th National Meeting, Boston, MA, November, 1997.

Topical and transdermal drug delivery, University of Cincinnati College of Pharmacy, Advanced Drug Delivery Class, November, 1997.

Finite dose diffusion in skin: When is the applied dose "infinite"? Gordon Research Conference on Barrier Function of Mammalian Skin, Tilton School, August, 1997 and AAPS 12th National Meeting, Boston, MA, November, 1997

Predictive models for mass transport in skin, SUNY Buffalo Chemical Engineering Dept., October, 1997.

Predicting absorption from creams and lotions, Physical Chemistry Seminar, Miami Valley Laboratories, October, 1997.

Emulsion properties and formulation, University of Cincinnati College of Pharmacy, February, 1996 and 1997

What did we learn about VIAS technologies from FAS 9? Skin Journal Club, Miami Valley Laboratories, October, 1996.

Influence of liposomal encapsulation on the penetration of a large, hydrophilic model compound through human skin in vitro, Society of Cosmetic Chemists Annual Seminar, Boston, May, 1996.

Percutaneous absorption of vanilloids: an in vitro/in vivo correlation for highly lipophilic compounds, AAPS 10th National Meeting, Miami, FL, November, 1995.

Percutaneous absorption of vanilloids: An in vitro/in vivo correlation for highly lipophilic compounds, Gordon Research Conference on Barrier Function of Mammalian Skin, Procter Academy, NH, August, 1995.

**REFERENCES**

Prof. Bradley D. Anderson  
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Prof. Gordon L. Flynn  
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**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed for Form Page 2.  
Follow the sample format on next page for each person. **DO NOT EXCEED FOUR PAGES.**

NAME		POSITION TITLE	
Gerald B. Kasting		Associate Professor of Pharmaceutics and Cosmetic Science	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Vanderbilt University, Nashville, TN	B.A.	1975	Chemistry
Massachusetts Institute of Technology, Cambridge, MA	Ph.D.	1980	Physical Chemistry

**A. Positions and Honors****Positions and Employment**

1980-1993 Research chemist, The Procter & Gamble Company, Cincinnati, Ohio  
 1993-1999 Senior Scientist, The Procter & Gamble Company, Cincinnati, Ohio  
 Directed laboratory research programs in the Corporate Research, Health Care, and Skin Care areas on a variety of projects. Particular emphasis on topical and transdermal drug delivery and the mathematical modeling thereof.  
 1999-2003 Associate Professor, College of Pharmacy, University of Cincinnati  
 2003-present Associate Professor (tenured), College of Pharmacy, University of Cincinnati

**Other Experience and Professional Memberships**

1986-present Member, American Association of Pharmaceutical Scientists  
 (various times) Reviewer, *J. Controlled Rel., Pharm. Res., Int. J. Pharm., J. Invest. Dermatol., Toxicol. Sci.*  
 1992-2001 Editorial Board member and reviewer, *J. Pharm. Sci.*  
 1996 Chair, AAPS Dermatopharmaceutics Focus Group  
 1997-present Editorial Board member and reviewer, *J. Cosmet. Chem.*  
 2001-2002 Chair, AAPS Dermatopharmaceutics Focus Group  
 2002-2003 Vice-Chair, Gordon Research Conference on Barrier Function of Mammalian Skin  
 2003-2004 Member, Reparative Medicine Study Section ZRG1 SSS-M 01 (NIH)  
 2004-2006 Editorial Board member and reviewer, *J. Pharm. Sci.*  
 2004-2005 Chair, Gordon Research Conference on Barrier Function of Mammalian Skin  
 2005 Member, Tissue Engineering Study Section ZRG1 MOSS-G 52 (NIH)

**Honors**

1970 National Merit Scholarship Award Winner  
 1971 High school Co-valedictorian  
 1971 Courier-Journal Outstanding Student  
 1972-1973 Breckenridge Scholar  
 1975 Phi Beta Kappa  
 1975 American Institute of Chemists Outstanding Senior Chemistry Major  
 1976-1978 National Science Foundation Graduate Fellow  
 1996 Society of Cosmetic Chemists, Shaw Mudge Award (best paper at national meeting)  
 2001 Society of Cosmetic Chemists, Shaw Mudge Award (best paper at national meeting)

**B. Selected peer-reviewed publications** (selected from 45 peer-reviewed publications)

1. J. C. Keister and G. B. Kasting, Ionic mass transport through a homogeneous membrane in the presence of an electric field, *J. Membrane Sci.*, **29** (1986) 155-167.
2. J. C. Keister and G. B. Kasting, The use of transient diffusion to investigate transport pathways through skin, *J. Controlled Rel.* **4** (1986) 111-117.
3. E. R. Cooper and G. B. Kasting, Transport across epithelial membranes, *J. Controlled Rel.* **6** (1987) 23-35.
4. G. B. Kasting, E. W. Merritt, and J. C. Keister, An in vitro method for studying the iontophoretic enhancement of drug transport through skin, *J. Membrane Sci.*, **35** (1988) 137-159.
5. C. L. Slough, M. J. Spinelli, and G. B. Kasting, Transdermal delivery of etidronate (EHDP) in the pig via iontophoresis, *J. Membrane Sci.*, **35** (1988) 161-165.
6. G. B. Kasting and J. C. Keister, Application of electrodiffusion theory for a homogeneous membrane to iontophoretic transport through skin, *J. Controlled Rel.* **8** (1989) 195-210.
7. G. B. Kasting and L. A. Bowman, Electrical analysis of fresh, excised human skin: A comparison with frozen skin, *Pharmaceut. Res.* **7** (1990) 1141-1146.
8. G. B. Kasting and L. A. Bowman, DC electrical properties of frozen, excised human skin, *Pharmaceut. Res.* **7** (1990) 136-145.
9. J. C. Keister and G. B. Kasting, A kinetic model for ion transport in skin, *J. Membrane Sci.*, **71** (1992) 257-271.
10. G. B. Kasting, Theoretical models for iontophoretic delivery, *Adv. Drug Deliv. Rev.*, **9** (1992) 177-199.
11. G. B. Kasting and P. J. Robinson, Skin permeability is limited by viable tissues, *Pharmaceut. Res.* **10** (1993) 930-931.
12. G. B. Kasting, W. R. Francis, and G. E. Roberts, Skin penetration enhancement of triprolidine base by propylene glycol, *J. Pharm. Sci.*, **82** (1993) 551-552.
13. G. B. Kasting, T. G. Filloon, W. R. Francis, and M. P. Meredith, Improving the sensitivity of in vitro skin penetration experiments, *Pharmaceut. Res.* **11** (1994) 1747-1754.
14. D. Imbert, G. B. Kasting, and R. R. Wickett, Influence of liposomal encapsulation on the penetration of retinoic acid through human skin in vitro, *J. Soc. Cosmet. Chem.*, **45** (1994) 119-134.
15. D. I. Imbert, G. B. Kasting, and R. R. Wickett, Measuring the encapsulation of cosmetic ingredients into liposomes: A method for large, hydrophilic compounds, *J. Soc. Cosmet. Chem.* **47** (1996) 337-350.
16. G. B. Kasting, W. R. Francis, L. A. Bowman, and G. O. Kinnett, Percutaneous absorption of vanilloids: In vivo and in vitro studies, *J. Pharm. Sci.* **86** (1997) 142-146.
17. D. Imbert, G. B. Kasting, and R. R. Wickett, In vitro testing of topical liposomes: what we learned from a stratified skin permeation approach, *Perspectives in Percutaneous Penetration* **58** (1997) 202-205.
18. G. B. Kasting, Kinetics of finite dose absorption through skin 1. Vanillylnonanamide, *J. Pharm. Sci.*, **90** (2001) 202-212.
19. G. B. Kasting and P. Saiyasombati, A physico-chemical properties based model for estimating evaporation and absorption rates of perfumes from skin, *Int. J. Cosmet. Sci.*, **23** (2001) 49-58.
20. P. S. Talreja, N. K. Kleene, W. Pickens, T.-F. Wang, and G. B. Kasting, Visualization of lipid barrier and measurement of lipid path length in human stratum corneum, *AAPS PharmSci.* **3** (2001) Article 13.
21. G. B. Kasting and N. D. Barai, Equilibrium water sorption in human stratum corneum. *J. Pharm. Sci.* **92** (2003) 1624-1631.
22. P. Saiyasombati and G. B. Kasting, Disposition of benzyl alcohol following topical application to human skin in vitro. *J. Pharm. Sci.* **92** (2003) 2128-2139.
23. G. B. Kasting, N. D. Barai, T.-F. Wang and J. M. Nitsche, Mobility of water in human stratum corneum. *J. Pharm. Sci.* **92** (2003) 2326-2340.
24. P. Saiyasombati and G. B. Kasting, Two-stage kinetic analysis of fragrance evaporation and absorption from skin. *Int. J. Cosmet. Sci.* **25** (2003) 1-9.
25. P. Saiyasombati and G. B. Kasting, Evaporation of benzyl alcohol from human skin in vivo. *J. Pharm. Sci.* **93** (2004) 515-520.
26. K. Kretsos, G. B. Kasting, J. M. Nitsche, Distributed diffusion-clearance model for transient drug distribution within the skin. *J. Pharm. Sci.* **93** (2004) 2820-2835.
27. A. Santhanam, M. A. Miller, and G. B. Kasting, Absorption and evaporation of N,N-diethyl-m-toluamide (DEET) from human skin in vitro. *Toxicol. Appl. Pharmacol.* **204** (2005) 81-90

**C. Research Support****Ongoing Research Support**

Research contract Kasting (PI) 07/01/05 – 06/30/08  
 Development of a Toxicodynamic Model to Better Predict Epidermal \$282,333  
 Bioavailability of Contact Allergens  
 COLIPA

This is a joint research project with the contact allergy research group at Procter & Gamble to develop better risk assessments for consumer products with regard to elicitation of allergic responses.

R01 OH007529 Kasting (PI) 09/01/02 – 08/31/06  
 Improved Methods for Dermal Exposure Assessment \$1,333,670  
 NIOSH/CDC

This joint project with Prof. J.M. Nitsche (SUNY Buffalo Chem. Eng.) involves the progression of the detailed mathematical model for chemical transport in skin initiated under GOALI BES-98-18160. Special emphasis is given to potentially hazardous chemicals to which workers may be dermally exposed.

Role: PI

RO1 DK61689-01 Roy-Chaudhury (PI) 08/05/02 – 07/31/06  
 Local Antiproliferative Therapy for Venous Neointimal Hyperplasia \$24,705  
 NIH

The objective of this project is to develop drug-loaded polymer systems that reduce the intravenous tissue growth leading to plugging of stents used in hemodialysis treatment of diabetic subjects. GBK has responsibility for modeling of drug release from the polymer systems.

Role: Collaborator

Research contract Kasting (PI) 3/01/05 – 2/28/06  
 $\alpha$ -Hydroxy Acid Skin Delivery and Retention \$14,000  
 Kao Brands

This project is designed to support the risk assessment associated with Kao Brands' line of  $\alpha$ -hydroxy acid-containing skin and hair care products.

Research contract Hoath (PI) 6/01/05 – 11/30/05  
 Development of a Standardized in Vitro Human Skin Equivalent \$78,000  
 for Assessment of Product Safety and Efficacy  
 This project will test the utility of a new growth system for cultured skin substitutes (developed in GBK's laboratories) as an in vitro test system for skin care consumer products.

**Completed Research Support (last three years)**

Industrial research contract Kasting (PI) 07/01/01 – 06/30/03  
 Impact of Novel Surfactant Systems on Topical Delivery \$30,000  
 The Procter & Gamble Company  
 This project is an experimental investigation of the topical delivery properties of surfactant/water systems with an unusual cubic phase architecture.  
 Role: PI

Industrial research contract Kasting (PI) 11/01/01 – 05/30/03  
 Glycerol Skin Absorption Studies \$10,450  
 The Andrew Jergens Company  
 This project is an experimental investigation of the skin deposition and absorption of the moisturizing agent, glycerol, from prototype skin cream formulations.  
 Role: PI



SHC #8670 Boyce (PI)  
Shriner's Burns Institute

1/01/02 – 12/31/02  
(unpaid)

This project is directed toward characterization, use, and scale-up of cultured skin substitutes for burn allograft therapy.  
Role: Consultant

GOALI BES-9818160 Nitsche (PI)  
Comprehensive Model of Molecular Transport and Delivery Through the Skin  
NSF

04/01/99 – 03/31/02  
(unpaid)

This project involves the initial development of a detailed mathematical model for drug transport in the skin, using 2-D and 3-D finite difference models to represent drug transport through a detailed skin microstructure.  
Role: Industrial partner (obtained while at Procter & Gamble)